3200/3300/3500 Doppler Ultrasonic Flow Monitor System

4-3200.090 (A-2/03)

Features

- **Bi-directional flow**
- **Measures debris laden flow**
- **Self-diagnostic**
- **Minimal straight run requirements**
- **Small, no-moving parts**
- **RS232 communication**
- **Partial and full conduit flow measurement**
- **7 years stand-alone power**
- **Non-volatile memory**
- **High-intensity proportional flashing rate indicator**
- **Weatherproof SS enclosure**
- **Vandal resistant**
- **Remote communications capability**
- **PC/Pocket PC access and downloads**
- **Standard flow data logger**
- **4 to 20mA or pulse output**

Description

The +GF+ SIGNET 3000 Series Ultrasonic Flow Monitoring System advances the use of Doppler ultrasound technology in flow measurement by utilizing proprietary "Advance Spectrum" signal processing in measuring the entire flow stream. The result is reliable, power-efficient, low cost of ownership, liquid flow monitoring in open or closed channels. The +GF+ SIGNET 3200 includes features tailored for top performance in irrigation flow applications. The +GF+ SIGNET 3300 includes additional features to meet common requirements in a variety of applications like municipal water/wastewater, industrial waste, etc.

The +GF+ SIGNET 3000 Series systems include a solar panel battery charging system up to 7 years stand-alone operation, depending on user set-up and environmental conditions. This vandal-resistant unit features dual password protected local or remote downloading of logged data. Both velocity and velocity/depth combination sensors have no moving parts and lend minimal obstruction in the flow stream.

Applications

- **Irrigation**
- **Intake Water**
- **Wastewater**
- **Animal Waste**
- **Agricultural Waste**

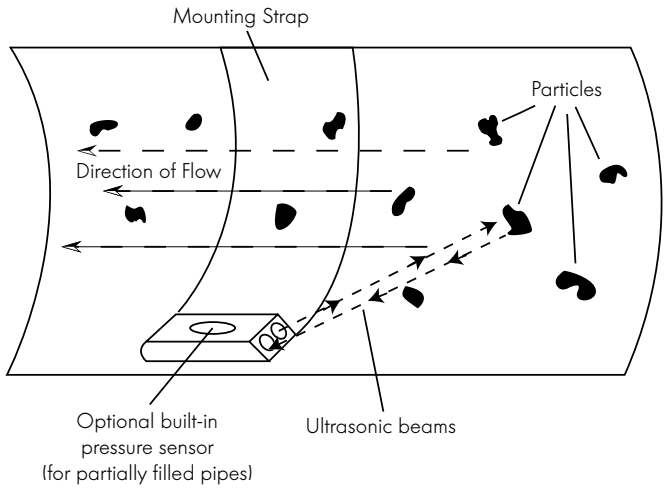
Principle of Operation

The transducer emits an acoustic signal that penetrates the fluid flow and is returned after reflecting from particles and air bubbles within the flow, the difference in frequency is proportional to the stream velocity.

In full or partially full pipes, the velocity of the flow stream varies markedly across the cross-section of the pipe. Typically, velocity is zero along the wall of the pipe and increases to a maximum at or about the center of the pipe. +GF+ SIGNET 3000 Series instruments receive reflected frequencies from particles moving at these different velocities and then calculates the average velocity of the stream.

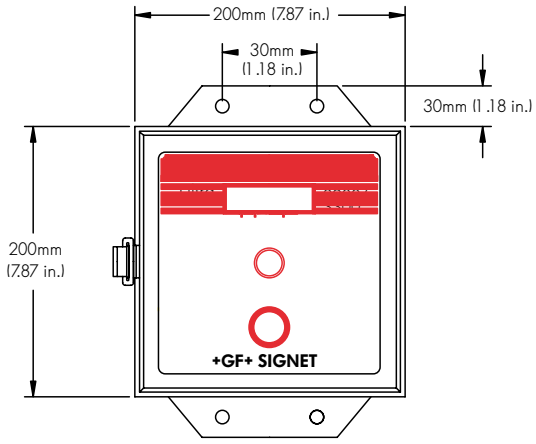
Depth is measured with a ceramic-based pressure transducer integrally mounted in a surface mount velocity sensor.

View of Cross-Section of Typical Pipe Installation

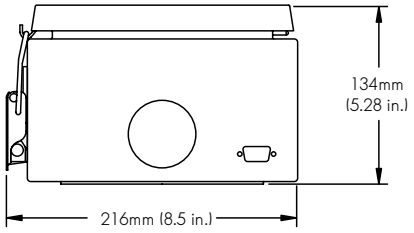


Dimensions

3200/3300 Monitor Loggers

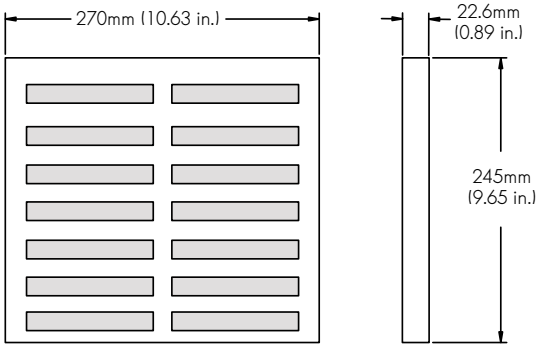


Front View



Bottom View

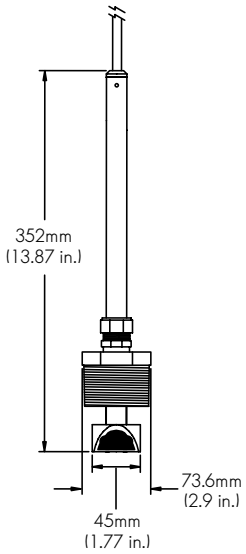
Solar Panel



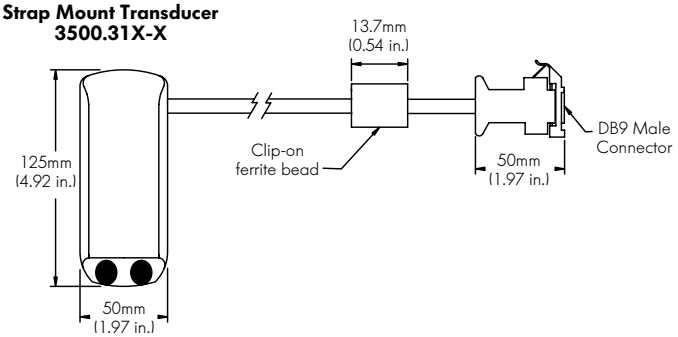
Front View

Side View

Insert Transducer
3500.320-X
3500.330-X



Strap Mount Transducer
3500.31X-X



Specifications

3200/3300 Monitor Loggers - General

Weight: 6 kg (14 lbs.)
Enclosure Rating: IP66
Operating Temp.: 23° to 122°F (-5° to 50°C)
Storage Temp.:
User Interface:

- Flow display is an internal 6-digit, 0.5 in. (12mm) LCD of constant status, flow rate and flow volume total (push button switch each)
- High-intensity LED light flashes proportionately to flow rate (user configurable)
- RS232 serial cable for local connection to PC and notebooks
- RS232 null modem cable for local connection to PocketPC

Flow Volume Logging Capacity:

- 3200: configuration dependent to maximum of 28,000 records
- 3300: configuration dependent to maximum of 56,000 records

Power:

- Internal 6V 12 Ah battery with external solar panel* or 110VAC/240VAC charger converter - regulated 9VDC-1 amp

Outputs:

- Pulse Output (standard): open-collector flow volume pulse, which shorts pulse pin to system ground
- 4 to 20mA - (1) Internal (optional)

Program Memory:
Battery backed NVRAM
Units of Measure:
User definable for rate and total (in metric or English units)

Software Applications (required):
Included CD-Rom with required FloCom™ for PCs with help files, user manual, installation instructions, system configuration, data downloading & velocity profile testing**
Options: contact factory for more information

* *Included battery-solar panel for trickle charge stand-alone power system. Approximate life expectancy is 7 years, depending on application conditions.*

** *a) Minimum PC requirements - Windows® 98 or newer, 10MB hard drive disk space, one serial comms port (must be COM1 or COM2), at least 640 x 480 resolution std. VGA screen*
b) Optional FloCom™ CE Software avalable for use PocketPC 2002 OS/CE 3.0 PocketPC with null modem cable

3300 Only Specifications

Logging:
Configuration dependent to maximum of 56,000 records. Includes independent logging of depth.
Outputs:
Optional (3) external 4 to 20mA - in addition to (1) optional internal 4 to 20mA. Standard pulse output included.
Alarm:
Short Message Service Protocol (SMS)

3500 Series Sensors

Velocity Performance

- Velocity Measurement Method: Wetted Doppler
- Bi-directional flow display (fully accountable), reverse flow indication and net flow calculation
- Velocity Range (strap mount and insertion type sensors): 0.1 ft/sec to 13 ft/sec
- Velocity Accuracy:
  ±1% of value up to 3.0m/sec (9.8 ft/sec)
  ±1.5% of value at velocities greater than 3.0m/sec (9.8 ft/sec)
- Velocity Resolution: 1mm (0.04 in.) at 1m/sec (3.3 ft/sec)

Depth Measurement Performance
Method:

- Ceramic pressure transducer with large flat sensing diaphragm which allows straight, undeflected flow over the sensing area to reduce draw down effects at high stream velocities and provides self cleaning with an impervious Alumina ceramic surface

Depth Sensor Ranges:

- 2m (6.6 ft.) above transducer face
- 4m (13.1 ft.)
- 10m (32.8 ft.)
- 20m (65 ft.)

Depth Sensor Accuracy:
0.2% of full scale at constant temperature in a static stream. 1% of full scale over a stream (5° to 55°C)
Depth Sensor Resolution: 1mm (0.04 in.)
Depth Over Range:
60m (197 ft.) wsêhout damage

Mounting

- Installation Distance:
  6x diameter and 2x diameter (reversible - up or down stream)
- Strap Mount Intrusion Area:
  surface mount 8cm^2 (1.25 in^2)
- Insertion Mount Intrusion Area:
  11.25 cm^2 (1.7in^2) tapped through 2 in. female NPT fitting
- Insertion Installation Limits:
  4 to 120 in. diameter or cross section

Wetted Materials

- Strap Mount: Epoxy and PVC
- Insertion Mount: Epoxy and nickel plated brass (SS optional)
- Cable: PVC 9 mm diameter from 10m (32.8 ft.) to 30m (98 ft.)

Ordering Information

Mfr. Part No.	Description
Electronics	
4-3200	Doppler Flow Meter Electronics Package Includes electronics, battery, solar panel, mounting hardware, serial cable and software; sensor sold separately
4-3300	Doppler Flow Meter Electronics Package Includes electronics, battery, solar panel, mounting hardware, serial cable and software; sensor sold separately
Sensors	
4-3500.310-1	Strap-on Doppler flow sensor, no depth, standard 10m cable
4-3500.310-2	Strap-on Doppler flow sensor, no depth, 20m cable
4-3500.311-1	Strap-on Doppler flow sensor, 2m depth, standard 10m cable
4-3500.311-2	Strap-on Doppler flow sensor, 2m depth, 20m cable
4-3500.312-1	Strap-on Doppler flow sensor, 4m depth, 10m cable
4-3500.312-2	Strap-on Doppler flow sensor, 4m depth, 20m cable
4-3500.313-1	Strap-on Doppler flow sensor, 10m depth, 10m cable
4-3500.313-2	Strap-on Doppler flow sensor, 10m depth, 20m cable
4-3500.320-1	Insertion Doppler flow sensor, no depth, standard 10m cable
4-3500.320-2	Insertion Doppler flow sensor, no depth, 20m cable
4-3500.330-1	Insertion Doppler flow sensor, 316SS, no depth, standard 10m cable
4-3500.330-2	Insertion Doppler flow sensor, 316SS, no depth, 20m cable

- *Strap-on sensors include polypropylene sensor mounting plate and sensor plate mounting kit.*
- *Optional 30 m and 50 m cable lengths available. Call factory for details*

Accessories

Mfr. Part No.	Description
Electronics Parts and Accessories	
4-3200.100	3200 Electronics only**
4-3300.100	3300 Electronics only**
4-3200.075	Battery - sealed lead acid 6V 12 Ah (Panasonic LC-R0612P)**
4-3200.390	Flowmeter mounting kit (straight and elbow)**
4-3200.076	Solar panel - Solarex 6V 5W MSX5V6**
4-3200.395	Solar panel mounting kit**
4-3200.090	+GF+ SIGNET FloCom™ Doppler operating system and instructions (Win32)**
4-3200.091	+GF+ SIGNET FloCom™ CE CD for Pocket PCs (Note: Null modem adapter required)
4-3200.391	Communication cable 3200/3300 to PC**
4-3200.392	Communication cable 3200/3300 to Pocket PC (null modem)
4-3200.393	4 to 20mA output module, internal, for 3200 and 3300
4-3300.393	4 to 20mA output module, external, for 3300 only
Sensor Parts and Accessories	
4-3500.391	Sensor mounting plate - stainless steel
4-3500.392	Sensor mounting plate - polypropylene***
4-3500.398	Sensor plate mounting kit
4-3500.390	Adjustable strap poly - 300mm to 450mm pipe
4-3500.393	Adjustable strap poly - 225mm to 300mm pipe
4-3500.397	Adjustable strap poly - mounting kit (machine screws, wire ties, and metal buckle)

*** Note: Included with 4-3200 and 4-3300 Electronics*
**** Note: Included with strap mount sensors*

+GF+ SIGNET

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